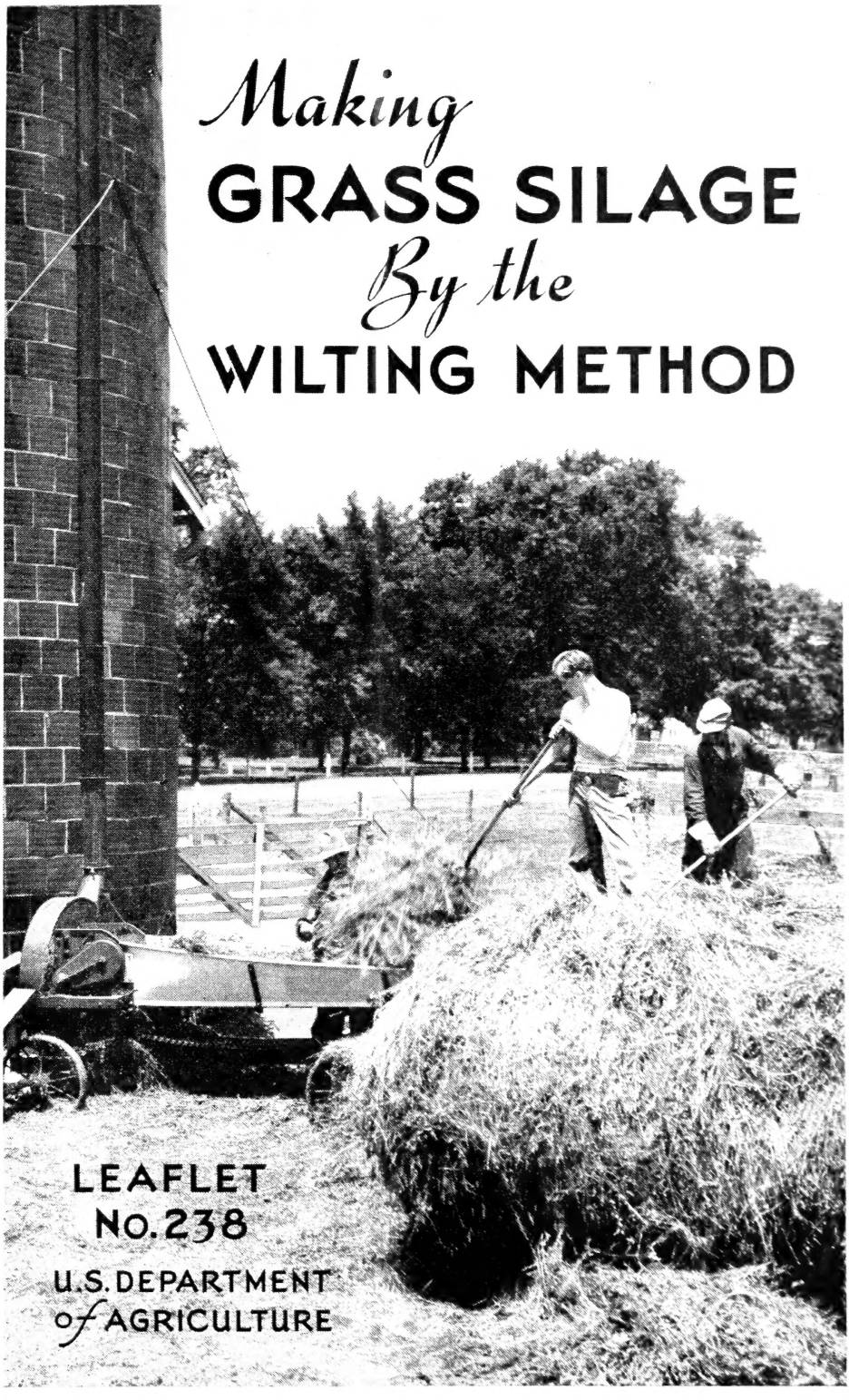
Making GRASS SILAGE *By the* WILTING METHOD



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MAKING GRASS SILAGE by the Wilting Method

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AN ABUNDANCE OF GOOD-QUALITY ROUGHAGE is essential for efficient milk production and the most profitable dairying. Dairy farmers depend on the hay crops for a large proportion of the roughage they need, but weather and other conditions often interfere with the making of good-quality hay. When conditions are likely to be unfavorable for making hay, the making of grass silage is a very satisfactory alternative.

Silage made from any of the crops ordinarily grown for hay, whether they are legumes, grasses, or small grain crops, is commonly called grass silage.

Until recently, most farmers and some investigators believed that grass silage would spoil unless molasses or an acid preservative was added. When war conditions made molasses too costly and the acids became unavailable, many farmers successfully adopted the so-called wilting method which requires no preservative.

Air Must Be Excluded

The most important factor for success in making any kind of silage is to force the air out of the ensiled material and keep it out. The presence of air allows the silage to mold; molding does not occur in the absence of air. This is true regardless of the kind of crop, the moisture content, and the presence or absence of a preservative.

Chopping the crop material fine (about ¼-inch lengths) makes it pack closer, which helps to force air out. In a deep silo the weight of the silage itself will force out most of the air; in a shallow silo, such as a trench, the silage must be tramped and weighted.

To keep air out of the silo the walls and doors must be airtight, and filling should be completed by adding 2 or 3 feet of heavy, fine-chopped material, such as green weeds or the unwilted green crop. As soon as the silo is full the top material should be leveled off and tramped thoroughly. Leveling and tramping should be repeated twice, at 2-day intervals, then once a week until no more settling occurs. Fill all spaces that open between the silage and the walls.

Too Much Moisture in Silage is Detrimental

The most important point in making silage from the hay crops, in addition to excluding the air, is to see that the moisture content of the chopped material is no higher than 68 percent when it goes into the silo.

If the moisture content is too high, juice will leak from the silo. Leaking juice creates a messy condition, makes a favorable place for flies to breed, and has an offensive odor. It is also destructive to metal, mortar, and concrete and may seriously weaken the silo structure. Moreover, high-moisture silage is less palatable and lower in feeding value than low-moisture silage.

Too much moisture is especially objectionable in the legume crops, such as alfalfa, clovers, cowpeas, soybeans, lespedezas, and vetches. The legume crops, and mixtures containing mostly legumes, make bad-smelling silages

if the moisture content is higher than 68 percent. Adding molasses would prevent the development of offensive odors in such silages, but it would not overcome the other objectionable features caused by excessive moisture. The true grasses, such as timothy, orchard grass, bluegrass, etc., also tend to act like the legumes if they are harvested in the early stages of growth. Grasses at the usual hay-making stage, and small grains, do not make bad-smelling silages even if the moisture content is high; nevertheless their palatability is improved by keeping the moisture content as low as 68 percent.

The Wilting Method

The wilting method of making grass silage merely calls for leaving the crop in the field until it has wilted to the proper content of moisture. No preservatives are required.

The only difficulty the farmer is likely to have in first using this method will be to determine just when the crop has wilted sufficiently to make good silage. Until experience enables him to judge when the crop is ready for the silo, just as he has learned to judge when it is ready for the mow or stack, he will do well to rely on the simple home-made moisture tester here described.

The moisture content of the chopped material as it goes into the silo should be no higher than 68 percent, but preferably around 65 percent. Crops harvested at the hay-making stage of maturity ordinarily will have about 75 percent of moisture, if there is plenty of moisture in the soil, otherwise they may have less. The time to allow such crops to wilt in order to reduce the moisture content to 68 percent will depend on a number of factors, such as the yield of the crop, and the temperature, wind, humidity, and intensity of sunlight. On a good drying day 2 hours in the swath should be long enough.

In case the crop becomes drier than 65 percent it can still be ensiled successfully, but it is not desirable to have it drier than 58 percent. The drier the crop is, the greater the care required to pack it firm enough to force the air out. Furthermore, the more drying that takes place the greater is the loss of carotene, both in the field and in the silo.

If rain or cloudy weather interferes with the wilting of the crop after silo filling has started and the farmer wishes to continue filling, he can run some dry hay through the cutter at the rate of 100 to 300 pounds for each ton of the crop material. The dry hay will soak up the excess moisture in the ensiled material. If the weather clears so that wilting can again take place, no more dry hay need be added.

Any hay that is added should be as good in quality as possible. The addition of straw is not advised. To avoid taking cured hay out of the barn for this purpose, make cocks of partly cured hay in the field and hold for use when needed. Fine-ground farm grains can be added instead of hay.

The Home-Made Moisture Tester

Almost any farmer will be able to make the moisture tester from materials already on hand (fig. 1). With this tester he can determine whether the crop is dry enough to make good silage, and also whether it is drier than is most desirable.

Following is a description of the materials needed and also of the procedure to follow in using the tester.

1. A piece of 2-inch pipe, 12 inches long, open at both ends. Four rows of 3/16-inch holes should be drilled in the pipe, 10 holes to the row, and the rows should be equally distant apart. Starting ½ inch from one end of the pipe, drill the holes in each row ½ inch apart from center to center. Smooth off the burrs made by the drill on the inside of the pipe.

2. A round hardwood plunger 14 inches long, beveled like a cold chisel on one end and flat on the other. It should fit the inside of the pipe snugly yet move freely.

3. A 2 × 4 lever 4½ feet long. Use the lever flatwise, with the beveled end under a beveled block nailed to the wall. Stand the testing pipe on a flat surface (wooden block or cement floor) near the wall, so the top of the plunger will fit in a small groove on the under side of the lever 1 foot from the edge of the block on the wall.

4. The material to be tested should be chopped with the silage cutter—not by hand. Set the cutter for ¼-inch lengths, if possible. Press the material firmly into the testing pipe 6 inches deep, but do not tamp or press hard enough to squeeze out juice.

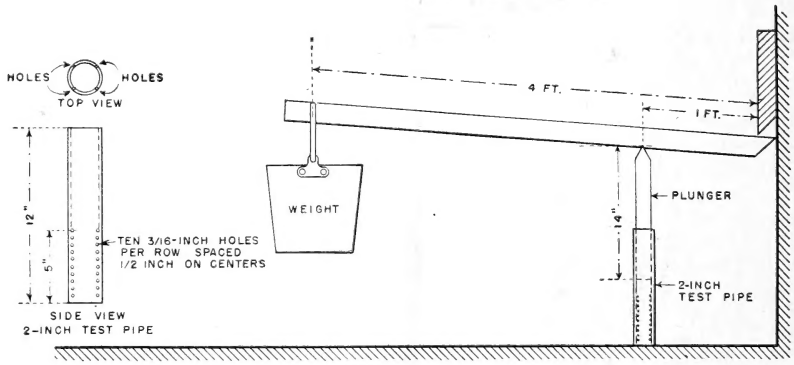

FIGURE 1.—Home-made tester for determining moisture content of grass silage.

In testing any kind of crop, either to find out whether it is too wet or too dry, use the weight specified in table 1. Hang the weight at the 4-foot mark on the lever and leave it *for 1 minute* for all tests.

If any juice whatever is expressed from any hole in the testing pipe by the weights shown in the "too wet" column (table 1), the moisture content of the crop material is approximately 68 percent or higher. If no juice is expressed by the weights in the "too dry" column, the moisture content is lower than approximately 58 percent.

In case a load has too much or too little moisture at the time of the test run it into the silo anyway, and then try to have subsequent loads nearer to the desired moisture content.

TABLE 1.—*Weights to use in testing different kinds of crop material*

Kind of crop [1]	Length of cut	Too wet if juice is expressed by these weights [2]	Too dry if no juice is expressed by these weights [3]
	Inch	*Pounds*	*Pounds*
Legumes	¼	32	64
	½	41	
Small grains	¼	50	82
	½	66	
Grasses	¼	60	90
	½	79	

[1] For mixtures of these crops use intermediate weights depending on the proportion of the different crops.
[2] If these weights express juice, the moisture content is approximately 68 percent or higher.
[3] If these weights do not express juice, the moisture content is lower than approximately 58 percent.

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